H Skinner—

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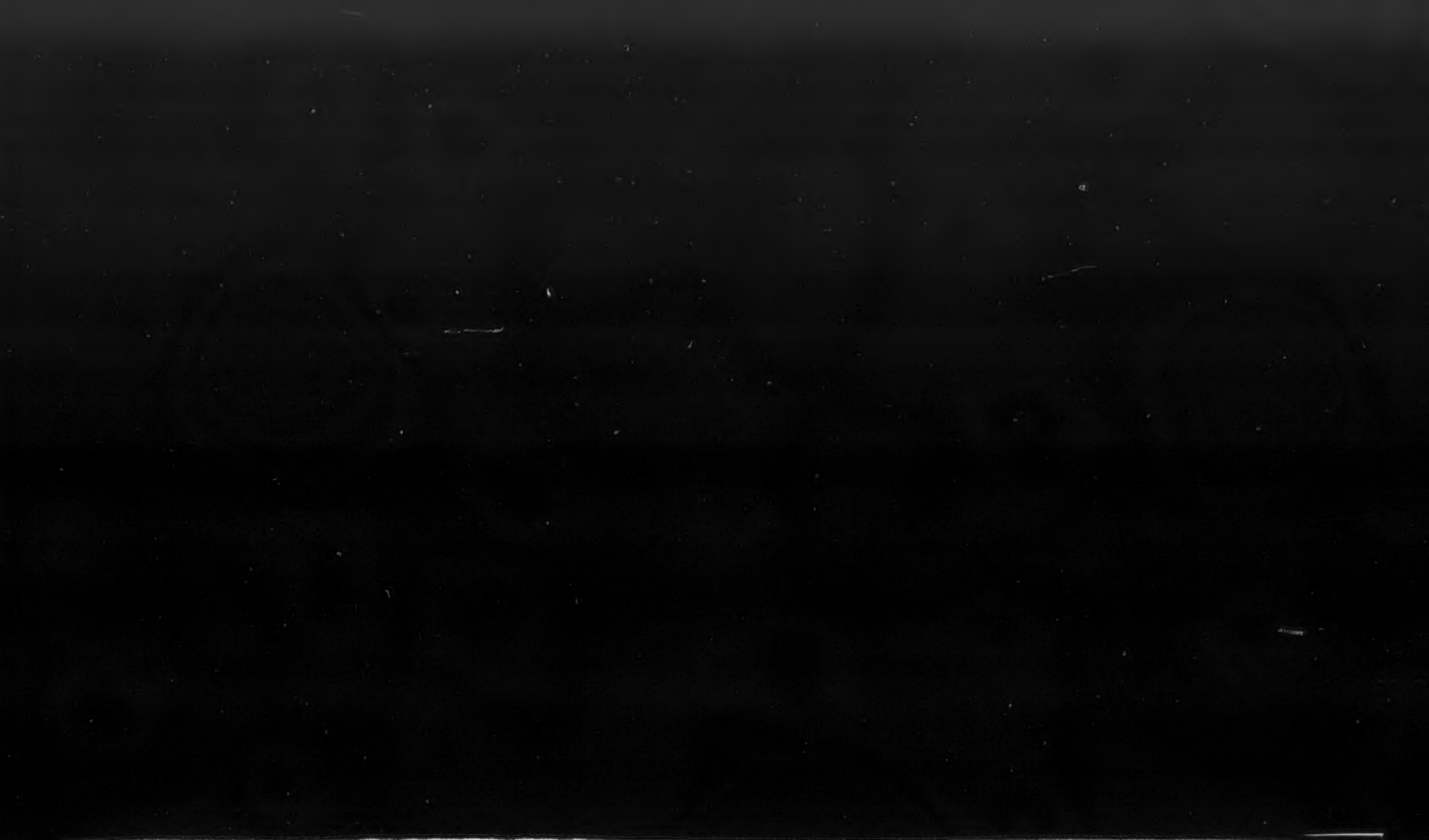

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Parasitic Hymenoptera Feeding by Indirect Suction.

By L. O. HOWARD, U. S. Bureau of Entomology,
Washington, D. C.

The gaps in our knowledge of the biology and economy of the parasitic Hymenoptera are so great as almost to be appalling. The object of this note is once more to call to the attention of American workers a very interesting field in which many more observations are needed.

In an article published in the June, 1910, number of the Journal of Economic Entomology, I wrote of the habit with certain Chalcidoidea of feeding at the puncture holes made by the ovipositor, mentioning Paul Marchal's observations on the feeding of *Tetrastichus xanthomelaenae* in this way on the eggs of the European elm leaf beetle, those of Dr. H. T. Fernald of a similar habit on the part of *Tetrastichus asparagi* with the eggs of the imported asparagus beetle; also those of Marchal again of the same habit with *Aphelinus mytilaspidis* in relation to *Aspidiotus ostreaeformis;* also the observations by Mr. J. G. Sanders, then of the federal Bureau of Entomology, on *Aphelinus fuscipennis* in relation to *Aspidiotus rapax.* All of these observations were practically identical and were as-

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sumed in my note to be indicative of a habit which might be very general among many parasitic Hymenoptera, and I called attention to them especially for the very good reason which I quoted from Marchal and which may be translated, very freely, as follows:

> This is a factor hitherto neglected which must be taken into consideration in the study of the evolution and specialization of the instincts related to reproduction which one observes with insects and especially with Hymenoptera.

In 1921 Mr. B. Trouvelot of Marchal's laboratory published a note (reviewed by me in *Entomological News* for July, 1922) in which he described a most curious and interesting complication in this habit of feeding at the puncture hole, showing that *Habrobracon johannseni* piercing the cocoons of the potato tuber moth secretes a gelatinous tube connecting the body of the larva with the exterior of the silken cocoon so that the parasite can feed readily. I pointed out that a similar habit would surely be found among parasitic Hymenoptera in this country, and my object in sending the note to *Entomological News* was to ask observers to look into the matter.

Since that time other similar observations have been made. J. L. Lichtenstein in France has noticed a similar procedure with *Habrocytus cionicida,* a Chalcidoid parasite of *Cionus thapsi.* J. C. Faure, also in France, found something similar with a species of *Pachyneuron* and with *Pteromalus variabilis* and *Arthrolytus* sp. Jointly with Messrs. Paillot and Ferriere, he found something similar with *Dibrachys boucheanus,* while Voukassovitch has studied a similar procedure with *Dibrachys affinis* and *Pteromalus encerus.* Thus it will be seen that a group of entomologists in France have been paying rather especial attention to this remarkable habit.

Quite recently J. C. Faure (Revue de Zoologie agricole et appliquée, October 1924, pages 225-233) has published certain studies on the oviposition and mode of nutrition of *Pteromalus variabilis* and *Eurytoma appendigaster* when parasitizing *Apanteles glomeratus* through its cocoons.

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He shows how the adult of *Pteromalus variabilis* runs over the cocoons touching them with its antennae until it stops, places its legs firmly upon the silk, draws its abdomen under until it forms a right angle with the rest of the body, and thrusts its ovipositor into the wall of the cocoon. The movements which it makes are described. Then the ovipositor seeks the larva in the cocoon, exploring the surface of its body and finally puncturing it, which results in a paralysis of the larva. Then the ovipositor is withdrawn, the abdomen contracts rhythmically, and a liquid consisting of a whitish mucus is secreted between the stylets in drops and descends to the body of the host larva. After some seconds the ovipositor is withdrawn very slowly, permitting the liquid of the forming tube to rest in place. The tube thus formed varies in length according to the space between the larva and the wall of the cocoon, and is of a brilliant white in color and is difficult to see at first. It comes quite to the outside of the cocoon above the silk threads. After withdrawing the ovipositor, the parasite searches, first with its antennae and then with its palpi, to find the extremity of the tube, through which it sucks up the blood of the larva. It may suck thus from fifteen to thirty minutes, and the whole feeding may last from twenty minutes to an hour and a half with periods of rest. Disturbed, or by her own volition, the female may abandon the tube, but readily finds it again.

This feeding method may also be used when the larvae of the *Apanteles* are taken out of their cocoons. In this case also a tube is secreted, but it is short and only takes from five to seven minutes to make. *Dibrachys boucheanus* does the same thing, as Voukassovitch observed when he gave it larvae of *Sitotroga*. Faure also noticed that sometimes the parasites nourished themselves without the help of a tube, applying their mouths to the point pierced by the ovipositor. According to Genieys and also to Picard, *Habrobracon johannseni* makes no tube if it is feeding upon larvae taken out of the cocoon. Genieys questions whether the absence of the tube is due to a change of instinct or the mechanical impossibility of making a tube under such circumstances. Faure thinks that the obser-

vations just cited discard the second hypothesis and that it is difficult to admit the first, at least in a general way.

The egg-laying is then described for this species, and then the formation of a similar tube with *Eurytoma appendigaster*, another enemy of the *Apanteles*. This process is described in detail, but is not strikingly dissimilar to the one just described, although the perforation of the cocoon and the formation of the tube with the latter species only occupies from five to six minutes. Then the egg-laying of the *Eurytoma* is described in further detail.

Under the head of General Considerations, Faure goes on to state that in his opinion nutrition with the aid of a suction tube is probably frequent with Hymenoptera which parasitize hosts living in closed receptacles (such as the cocoons of *Apanteles* and galls and so on), but of course the observations which have as yet been made—eight in all and by a very few entomologists—will hardly permit a generalization. He points out that Picard has noticed that the female of *Melittobia acasta* which wishes to nourish itself from a living prey in a closed receptacle to the walls of which it does not adhere, attacks the cocoon with its mandibles and passes its head through the hole made in this way, afterwards laying its egg through the cocoon wall.

The same writer also describes the mode of nutrition of *Hemiteles areator*, which draws along its ovipositor the blood of the larva of *Apanteles* enclosed in its cocoon. The paralysis of the victim before feeding or egg-laying, which has been noticed with numerous Hymenopterous parasites, is indispensable in such cases as those just described in order to enable the making and the use of a suction tube. The liquid from which the tube is built plays a plain role in the sliding of the egg down through the ovipositor and in its fastening the egg to its host. Faure asks whether there is in all this an indication that in nutrition we may find the adaptive origin of the ovipositor sheath?

It may be asked, as Trouvelot suggests, whether this habit of nutrition with the aid of a tube associated with the special mechanism of oviposition does not constitute one of the important biological characters which permit the parasitic rela-

tion to be extended to hosts which live in enclosed places. Faure does not give this conception any great weight, since he has pointed out two other methods of nutrition which are possible at the expense of hidden hosts. It seems also that certain females never nourish themselves from their hosts when laying their eggs. Moreover, he has observed the oviposition of numerous Hymenoptera, and believes that the existence of a viscous liquid is not indispensable to permit the descent of the egg, while the fixation of the egg upon the host is not the general rule. It should be also noticed that while certain insects secreting a tube abandon this practice when they are feeding upon naked larvae, others preserve it.

Undoubtedly many observations on the mere feeding at the puncture hole have been made since the publication of my note in June 1910, enough, in fact, to justify Marchal's suggestion that the habit must be rather general; but very few of them have been placed on record. R. A. Cushman in his important article on the "Calliephialtes Parasite of the Codling Moth" in the *Journal of Agricultural Research,* volume I, page 232, showed that *C. messor* feeds greedily on the juices issuing from the punctures which it makes in the codling moth larva, and Mr. A. B. Gahan has shown me unpublished notes indicating a similar habit on the part of *Itoplectes conquisitor* when puncturing the pupae of *Autographa brassicae* and on the part of *Cirrospilus flavicinctus* in its relations to *Coptodisca splendoriferella.* Some of the other notes that must have been made should be published. In fact, as I talk with entomologists here and there and everywhere, I am constantly learning of observations which have never been recorded but which would be extremely suggestive and would inspire other workers if they were only put into print.

But about the tube formation there seem to have been no recorded observations in the United States. I was inclined to be a bit incredulous until Trouvelot himself showed me the tube plainly in Marchal's laboratory in June, 1923. It only took a little close observation, and Faure states in his article from which we have just quoted that he saw the whole operation easily under the binocular microscope.

Six New Thysanoptera from the Western United States.

By J. Douglas Hood, University of Rochester.

(Continued from page 105.)

Rhynchothrips piger sp. nov.

♀ (brachypterous).—Length about 1.6 mm. Color dark blackish brown (black to the naked eye), with tarsi and apices of all femora and tibiae brownish yellow; antennae with segments 1, 2, 7 and 8 brown, 2 paler apically and 7 in pedicel; 3 yellow, sometimes lightly shaded with brown at apex; 4-6 progressively darker, brownish yellow or brown, with yellow pedicels, 4 sometimes nearly as pale as 3.

Head very slightly wider than long, broadest somewhat behind eyes; cheeks rounded, distinctly converging posteriorly, the head at base about 0.9 the greatest width; lateral and dorsal surfaces striate with widely spaced anastomosing lines which become rather heavily reticulate on vertex, and with the usual minute, transparent bristles; vertex broadly rounded in front, overhanging insertion of antennae, and bearing the anterior ocellus at its extremity; postocular bristles nearly as long as eyes, almost pointed, dark in color. Eyes nearly four-tenths the length of head, two-thirds as wide as their interval. Ocelli situated well forward. Antennae 2.5 times as long as head; segment 3 clavate, symmetrical; 4-6 pedicellate, 4 longer than 5 and about 1.9 times as long as wide, pedicel not sharply separated from rest of segment; 7 distinctly pedicellate; 8 broadly united to 7. Mouth cone long and acute, extending well on to mesosternum.

Prothorax along median dorsal line about two-thirds as long as head and (inclusive of coxae) nearly 2.9 times as wide as long, without a median dark line, surface without sculpture; all bristles present, blunt but not knobbed, dark in color, outer pair at posterior angles somewhat longer than postoculars, inner pair about equal to postoculars, midlaterals still shorter, the two pairs on anterior margin decidedly shorter and slenderer than midlaterals. Pterothorax slightly wider than prothorax, sides slightly convex, nearly parallel. Wings about attaining base of abdomen, brown in color, and with the three usual sub-basal bristles as long as midlaterals, blunt, brown. Legs rather long, noticeably slender; fore tarsi unarmed.

Abdomen large, broad, fully 1.4 times as wide as prothorax. Tube about three-fourths as long as head, about 1.8 times as long as basal width, and fully twice as wide at base as at apex,

sides straight. Bristles dully pointed, brown; lateral bristles on segment 9 about 0.7 as long as tube, shorter than terminal bristles.

Measurements of holotype (♀): Length 1.59 mm.; head, length 0.188 mm., width behind eyes 0.196 mm., at base 0.176 mm., prothorax, length 0.123 mm., width (inclusive of coxae) 0.353 mm.; pterothorax, width 0.405 mm.; abdomen, width 0.510 mm.; tube, length 0.146 mm., width at base 0.081 mm., at apex 0.038 mm.

Antennal segments.....	1	2	3	4	5	6	7	8
Length (microns)...	45	57	75	70	64	66	58	37
Width (microns)...	34	35	33	37	34	32	27	14

Total length of antenna 0.47 mm.

♂ (brachypterous).—Smaller than female and with more slender abdomen; fore tarsus unarmed.

Described from 5 females and one male, collected by Mr. L. O. Jackson, at Eldorado Springs, Colorado, June 23, 1918, on a plant which is, as yet, undetermined.

Close to *Rh. russelli*, but structurally separable by having the tube three-fourths, instead of 0.9, as long as head; the mouth cone acute and extending well onto mesosternum, instead of barely attaining it; the prothorax nearly 2.9, instead of 2.0 to 2.25, times as wide as long; the fourth antennal segment longer, instead of shorter, than 5, and 1.9, instead of 1.6, times as long as wide; as well as by the broader head, longer mid-lateral bristles and slenderer legs. In coloration the only apparent difference lies in the antennae, which in *piger* are much darker, with the first two segments more nearly concolorous with the head than with the third segment.

Eurythrips harti sp. nov.

♀ (macropterous).—Length about 1.5 mm. Color light brown, with thorax, sides of head and tip of abdomen slightly darker; subhypodermal pigmentation orange yellow, appearing black by reflected light; legs pale yellow, with femora and tibiae lightly shaded with brown; antennae with segments 1 and 2 pale, about concolorous with legs, slightly darkened at sides, 3-8 dark brown, 3 palest and with yellow pedicel, 8 darkest.

Head about 1.08 times as long as wide, constricted at posterior angles of eyes, cheeks diverging slightly to base, notice-

ably roughened in basal half, dorsum of head smooth; vertex slightly elevated and produced, slightly overhanging, bearing the anterior ocellus at its extremity; postocular bristles nearly half as long as head, pointed, colorless; *postocellar* bristles a little longer than diameter of ocelli; occiput with the usual pair of small bristles about midway between eyes and base of head. Eyes about one-fourth as long as head, somewhat bulging, two-thirds as wide as long, and less than half as wide as their interval, rather coarsely facetted, about 5 facets making up their lateral outline. Ocelli not situated far forward, the posterior margin of posterior ocelli slightly in advance of center of eyes; anterior ocellus directed forward. Antennae 2.3 times as long as head; segments 3-7 pedicellate; 8 somewhat narrowed at base but hardly lanceolate or pedicellate, broadly united to 7. Mouth cone semicircularly rounded at apex, slightly surpassing middle of prosternum; tip of labrum not surpassing tip of labium.

Prothorax nearly 0.8 as long as head and (inclusive of coxae) about twice as wide as long, surface without sculpture; anterior marginal bristles minute, all others long, slender and pointed, nearly colorless, midlaterals about equal to postoculars, those at anterior angles much shorter and those at posterior angles much longer and curved. Pterothorax wider than prothorax, narrowed posteriorly, sides slightly convex. Wings of nearly the same width throughout, darker basally, quite uniform brownish beyond; no accessory hairs on posterior margin near tip; the three subbasal bristles pointed, outer longest and about equal to postoculars, others slightly shorter. Legs moderately short and strong, fore tarsi unarmed.

Abdomen wider than pterothorax. Tube nearly 0.9 as long as head and about twice as long as basal width, which is about 1.8 times the apical; sides straight. Bristles long, pale yellow and pointed, those on segment 9 much longer than tube; terminal bristles darker, two-thirds as long as tube.

Measurements of holotype (♀): Length 1.49 mm.; head, length 0.174 mm., greatest width 0.161 mm., width behind eyes 0.135 mm.; eyes, length 0.047 mm., width 0.032 mm., interval 0.075 mm.; postocular bristles, length 0.080 mm.; prothorax, length 0.135 mm., width (inclusive of coxae) 0.267 mm.; pterothorax, width 0.300 mm.; abdomen, width 0.345 mm.; tube, length 0.155 mm., width at base 0.079 mm., at apex 0.044 mm.

Antennal segments.....	1	2	3	4	5	6	7	8
Length (microns)...	42	54	56	54	56	53	49	40
Width (microns) ...	42	34	36	36	32	28	27	14

Total length of antenna 0.40 mm.

Described from one macropterous female taken by Charles A. Hart, at Brownsville, Texas, November 20, 1911, "in sweepings from grass, etc."

Readily known from the other species of the genus which have pointed bristles by the dark brown color of the third and fourth antennal segments (excepting the yellow pedicel of segment 3), the rounded mouth cone, unarmed fore tarsi, long antennae and short postocellar bristles.

Dedicated to Mr. Hart, who for several years spent all his leisure time collecting Thysanoptera in Illinois and Texas, and who in this way added to the North American list more than forty species new to science, three more than were recorded in 1902 by Hinds from the entire continent.

Oedaleothrips jacksoni sp. nov.

♀ (apterous).—Length about 2.5 mm. General color deep black; posterior third of pterothorax and all of segment 1 of abdomen nearly white; segment 5 of abdomen with a pair of snow-white blotches at the posterior angles; segments 1-3 of antennae lemon yellow, the first two slightly tinged with pale brown at base, the remainder of antennae abruptly deep black; legs blackish brown, middle and hind tibiae and their tarsi distinctly darker; tube black.

Head about 1.5 times as long as wide, decidedly elevated and swollen behind eyes, narrowed posteriorly to a neck-like base which is only two-thirds the greatest width of head; postocular bristles small, almost lateral, capitate, similar to a forwardly-directed pair near base of antennae. Eyes flattened, protruding, widely separated and about half as wide as their dorsal interval, produced posteriorly in an acute angle on ventral surface of head. Ocelli wanting. Antennae about 1.4 times as long as head, intermediate segments more slender than in *Oe. hookeri* Hood (see measurements), segment 3 nearly four times as long as greatest width; 5 and 6 produced at apex into a ventral tooth; 4-7 pedicellate.

Prothorax less than twice as long as head and (inclusive of coxae) about 1.8 times as wide as long, declivous posteriorly; bristles similar to postoculars. Pterothorax greatly reduced, about as long as broad but distinctly narrower than head; metanotum with heavy, concentric anastomising striae. Legs long and slender; hind femora and tibiae distinctly arcuate. Fore tarsus with a short and very stout triangular tooth.

Abdomen broad and heavy, abruptly broadened from the very narrow base, more than twice as wide as pterothorax; tube coal black, about 0.4 as long as head, and somewhat more than twice as wide at base as at apex, sides straight; bristles nearly colorless, pointed.

Measurements of holotype: Length 2.45 mm.; head, length 0.495 mm., greatest width 0.333 mm., width at base 0.213 mm.; prothorax, length 0.207 mm., width (inclusive of coxae) 0.375 mm.; pterothorax, width at middle 0.285 mm.; abdomen, greatest width 0.654 mm.; tube, length 0.189 mm., width at base 0.105 mm., at apex 0.051 mm.

Antennal segments.....	1	2	3	4	5	6	7	8
Length (microns)...	54	90	162	117	108	90	66	52
Width (microns) ...	43	41	43	41	38	34	29	21

Total length of antenna 0.739 mm.

Described from one female taken by Mr. L. O. Jackson, at Mill Gulch, Colorado, May 30, 1919, from a limb of Mountain Mahogany, *Cercocarpus parvifolius* Nutt.

Readily known from *Oe. hookeri* Hood (the type of the genus) by the coloration and the more slender antennae, differently shaped tube, and the pointed abdominal bristles. *Oe. querci*, from Florida, differs abruptly in having the third antennal segment uniform dark brown in color, and the second antennal segment only half as long as the fourth. The species of this genus are decidedly ant-like in general appearance and strongly suggestive, in several ways, of *Compsothrips bicolor* Karny, from Paraguay. *Oedaleothrips*, in fact, may prove to be a synonym of *Compsothrips* Reuter; but I have been unable to secure a specimen of the Old World genotype for comparison.

It is fitting that this interesting and striking species should be named for Mr. Jackson, whose careful collecting has done much to further our knowledge of the North American Thysanoptera.

Doctor William Schaus.

On February 27, the University of Pittsburgh conferred the degree of doctor of science upon Mr. Wm. Schaus, who is Honorary Assistant Curator of the U. S. National Museum, in charge of Lepidoptera.

Notes on Cerambycidae (Coleoptera).

By A. B. CHAMPLAIN, H. B. KIRK and J. N. KNULL,
Pennsylvania Bureau of Plant Industry.

(Continued from page 109.)

XYLOTRECHUS ACERIS Fisher—This species was found infesting red maple *(Acer rubrum)*, silver maple *(Acer saccharinum)* and sugar maple *(Acer saccharum)*.

The larval workings cause galls, usually after the species has emerged, on the smooth trunks and branches of the infested trees. Often stems four inches in diameter are attacked.

This species, unlike the preceding, does not girdle branches, but mines the heart wood to such an extent that the part above the injury is often broken off by the wind. Several adults will often emerge from one infested area.

XYLOTRECHUS COLONUS Fab.—Adults were reared May 22, from dead hemlock *(Tsuga canadensis)* log collected at Montebello, Pennsylvania.

CLYTOLEPTUS TRISTIS Csy.—This is merely a black form of *C. albofasciatus* Lap., and all color gradations of intermediate forms may be found. Many of these forms have been reared from the same infested grape stem in our cages, and we have observed them mating. It therefore seems quite logical to consider *C. tristis* Csy. a synonym of *C. albofasciatus* Lap.

CLYTUS MARGINICOLLIS Cast.—An adult of this species was collected at Piseguit Brook, eighteen miles south of Bathurst, New Brunswick, on June 24.

CYRTOPHORUS VERRUCOSUS Oliv.—Adults were reared from dead blue beech *(Carpinus caroliniana)* and redbud *(Cercis canadensis)* collected in the vicinity of Harrisburg, Pennsylvania.

PURPURICENUS AXILLARIS Hald.—This species was found doing considerable damage to the lower branches of swamp white oak *(Quercus bicolor)* near Hummelstown, Pennsylvania, branches over two inches in diameter often being pruned.

One egg seems to be laid to a branch, and as the larva works down toward the trunk of the tree it mines through the heartwood of the branch and branchlets as it goes, often pruning the

latter. The large galleries, which are often over two feet in length, are tightly packed with frass. The larva usually falls in the pruned branch; however, it may remain in the stub. Larvae have been observed to work into the main trunks of infested trees from the branches.

BATYLE SUTURALIS Say—Reared from various species of hickory collected at Hummelstown, Pennsylvania.

PSENOCERUS SUPERNOTATUS Say—Adults were reared from the dead branches of *Ulmus,* tulip poplar *(Liriodendron tulipifera),* willow and Virginia creeper *(Ampelopsis quinquefolia)* collected in the vicinity of Harrisburg, Pennsylvania.

PSAPHAROCHRUS QUADRIGIBBUS Say—In the vicinity of Harrisburg, Pennsylvania, this species was found breeding in the wood of dead redbud *(Cercis canadensis).*

AEGOMORPHUS DECIPIENS Hald.—Adults were reared from the dead wood of linden *(Tilia americana),* tulip poplar *(Liriodendron tulipifera),* black ash *(Fraxinus nigra),* sweet cherry and blue beech *(Carpinus caroliniana)* at Harrisburg, Pennsylvania.

LEPTOSTYLUS ACULIFER Say—This species was reared from partly decayed redbud *(Cercis canadensis)* at Harrisburg, Pennsylvania, and from the trunk of a dead gumbo limbo *(Bursera simaruba)* at Paradise Key, Florida.

ASTYLIDIUS PARVUS Lec.—In the vicinity of Harrisburg, Pennsylvania, this species was reared from the dead branches of poison ivy *(Rhus toxicodendron),* box elder *(Acer negundo)* and elm.

LEIOPUS VARIEGATUS Hald.—The species has been reared from the dead branches of Virginia creeper *(Ampelopsis quinquefolia)* and honey locust *(Gleditsia triacanthos)* at Harrisburg, Pennsylvania.

LEPTURGES SYMMETRICUS Hald.—Adults were reared from the dead branches of linden *(Tilia americana)* and box elder *(Acer negundo).*

LEPTURGES REGULARIS Lec.—This species was found breeding in the dead branches of buckeye *(Aesculus glabra)* at Columbus, Ohio.

LEPTURGES SIGNATUS Lec.—In the vicinity of Harrisburg,

Pennsylvania, this species has been reared from the dead branches of red mulberry *(Morus rubra)*, beech *(Fagus americana)*, poison ivy *(Rhus toxicodendron)*, box elder *(Acer negundo)* and hickory.

LEPTURGES QUERCI Fitch—Adults were reared from the dead branches of the following trees collected at Harrisburg, Pennsylvania: American elm *(Ulmus americana)*, black walnut *(Juglans nigra)*, butternut *(Juglans cinerea)*, ironwood *(Ostrya virginiana)*, poison ivy *(Rhus toxicodendron)* and linden *(Tilia americana)*.

LEPTURGES FACETUS Say—Adults were reared from the dead branches of *Crategus crus-galli* collected at Harrisburg, Pennsylvania.

EUPOGONIUS VESTITUS Say—Adults were reared June 16 from dead honey locust *(Gleditsia triacanthos)* branches collected at Rockville, Pennsylvania, and from dead branches of poison ivy *(Rhus toxicodendron)*, American elm *(Ulmus americana)*, linden *(Tilia americana)*, white oak and black oak.

EUPOGONIUS PUBESCENS Lec.—This species breeds in the small dead branches of linden *(Tilia americana)* in the vicinity of Harrisburg, Pennsylvania.

EUPOGONIUS SUBARMATUS Lec.—At Harrisburg, Pennsylvania, adults were reared from the dead branches of linden *(Tilia americana)*.

SAPERDA LATERALIS Fab.—Adults were reared from the dead branches of poison ivy *(Rhus toxicodendron)* collected at Hummelstown, Pennsylvania.

Genus OBEREA Muls.—Several of the species of this genus were found to have a two-year life cycle. The following is a list of host plants in which *Oberea* larvae were found working in the vicinity of Harrisburg, Pennsylvania: Witch hazel *(Hamamelis virginiana)*, *Prunus pennsylvanica*, *Prunus avinum*, *Prunus americana*, sweet cherry, *Cornus amomum*, *Cornus alternifolia*, *Cornus florida*, apple, peach, *Viburnum dentatum*, *Viburnum acerfolium*, *Crataegus*, *Alnus*, *Ulmus fulva*, *Amelanchier canadensis*, *Aster macrophyllus*, *Collinsonia canadensis*, *Anemone virginiana*, *Solidago graminifolia*, *Solidago serotina*, *Solidago juncea*, *Solidago caesia* and *Scutellaria*.

OBEREA MYOPS Hald.—This species, which is often placed erroneously as a variety of *O. tripunctata* Sived., does considerabel damage to living Rhododendron in the nurseries around Philadelphia, Pennsylvania. It breeds in *Kalmia* also.

OBEREA RUFICOLLIS Fab.—This species was found breeding in the stems of living spice bush *(Benzoin aestivale)*. Adults were reared June 12 from material collected at Rockville, Pennsylvania.

Two New Spiders from the Blue Ridge Mountains of North Carolina (Araneina).

By C. R. CROSBY and S. C. BISHOP.

In 1923 the writers collected during October in the Blue Ridge Mountains. Two of the most interesting spiders taken on the trip are described below.

The genus *Leptoneta* is represented in Europe by fourteen species, which are treated in an excellent monograph by L. Fage (Arch. Zool. Exp. ser. 5, vol. 10: 479-576, 1913). Most of the species inhabit caves, but some are found above ground in the moss of deep forests in the mountains. Heretofore the genus has been known in America from one species described by Banks as *L. californica* from a single female from Mt. Diablo, Contra Costa County, California.

The spiders of the genus *Leptoneta* are remarkable for the peculiar arrangement of the hairs on the tibia of the male palpus. On the side of this segment there is borne a long stiff hair, which toward the end is flattened, grooved and somewhat twisted. This grooved tip serves to hold the end of a long and very slender hair which arises nearer the base of the segment (Fig. 1). The function of this structure is probably auditory, and is doubtless an adaptation resulting from the subterranean habits of most members of the genus. It reminds one of the radio device known as the crystal detector.

The following species was collected by sifting decaying leaves under Rhododendrons in deep woods.

Leptoneta silvicultrix n. sp.

♂. Length, 1.5 mm. Cephalothorax yellowish white lightly tinged with brownish near the margin, broadly oval, narrower

in front, slightly constricted opposite the eyes, broadly rounded in front, truncate and slightly emarginate behind; seen from the side the highest point just back of the middle, steeply declived posteriorly, nearly level back of the eyes, clypeus slightly convex, steeply sloping forward. Anterior eyes in a recurved line, the median a little larger than the lateral, subcontiguous, separated from the lateral by one-third the diameter. The posterior pair of eyes smaller than the others, oval, subcontiguous, separated from the anterior lateral by the diameter of the latter.

Sternum light yellow suffused with brownish, darker on the margin, broadly triangular. Labium broader than long, trapezoidal, rounded in front. Endites nearly three times as long as labium, broadened towards the tip; serrula distinct, composed of 17 to 20 teeth. Chelicerae armed in front with a few slender black spines near the furrow and towards tip; claw long and slender, upper margin of the furrow armed with seven teeth, the five nearer the tip of claw evenly spaced and two towards the base widely separated; the lower margin with three small teeth near the tip. Outer surface of chelicera finely striate, forming a stridulating organ with a small spine on the inner side of the trochanter of the palpus.

Legs pale yellowish, slender. The paired claws armed with four slender teeth toward the base; the third claw short, strongly curved and unarmed. Onychium distinct. Abdomen regularly oval, light reddish brown over a pale yellowish ground color, on the underside darker, especially in front of the epigastric furrow and around the spinnerets, except behind.

Femur of palpus long, slender, armed distally on the outside with two rows of 4 black spines and one spine proximad of the group. Patella short, broad, armed on the outside near the base with a transverse row of four black spines. Tibia a little longer than patella, slightly enlarged distally and armed on the outside on the distal half with a series of 5 or 6 long black spines. Tarsus long, strongly constricted above near the middle; beyond the constriction there is a large external branch squarely truncate at tip. The distal margin of the branch armed with six spines, the one on the inner angle the largest and slightly plumose towards the tip. The spine on the outer angle next in size and also slightly plumose. One small spine arises just back of and between the two inner ones on the apical margin. On the outer angle of the branch there is an erect, short, black, blunt, slightly curved spine. Under high magnification the tip appears annulate with fine serrations on the inner side. Proximad of this spine there is a long spine

enlarged and flattened distally with an acute point. Just back of this there is one ordinary spine. Proximad of the constriction there arises on the external side a very long spine which curves down around the bulb; the tip is flattened, broadened and grooved for holding the end of a very fine-tipped spine which arises nearer the base of the tarsus. The tip of the internal

FIG. 1.—Palpus of *Leptoneta silvicultrix* n. sp.

FIG. 2.—Palpus of *Microhexura montivagus* n. sp.

branch of the tarsus armed with numerous large spines, two of which are plumose. (Fig. 1.)

♀. Length, 2.3 mm. Similar to the male in coloration; sternum and underside of abdomen a little darker. Abdomen swollen over epigynum. Colulus slightly longer than broad, tapering to a blunt point, armed with two long spines near the middle.

Holotype, male; Allotype, female. Oteen, North Carolina, 15 Oct., 1923. Paratypes: 1♂ and 2♀ same locality.

1♀ Minehole Gap, Buncombe County, 17 Oct., 1923. 2♂ and 1♀ Blowing Rock, 10 Oct., 1923. 1♂ Montreat, 16 Oct., 1923. All the localities in North Carolina.

We spent the great part of one day sifting moss and decaying leaves in the evergreen forest near the summit of Mt. Mitchell at an elevation of 6,600 feet. Most of the spiders collected in this way are too small for determination in the field. On returning home we were surprised to find that, mixed with

the little Linyphias and Erigones, were several specimens of the minute tarantula described below. The spider fauna of Mt. Mitchell seem to combine at least two distinct elements. This tarantula, evidently an intrusion from, or a survival of a subtropical fauna was found associated with such distinctively northern species as *Oedothorax montanus* Emerton and *Linyphia nearctica* Banks.

Microhexura n. g.

Median furrow of cephalothorax longitudinal. Chelicerae not provided with a rake, the furrow indistinct. Closely related to *Hexura* but possesses only two pairs of spinnerets; the chelicerae are not enlarged; the tibia of the first leg of the male armed with a long spur.
Type *M. montivagus* described below.

Microhexura montivagus n. sp.

♂. Length, 2.7 mm. Cephalothorax oval, a little longer than broad; longitudinal median furrow short, distinct. The radiating furrows weakly developed but indicated by pigmentation. Ground color of cephalothorax yellowish suffused with dusky, darker on the margins and on wedge-shaped areas between the radiating furrows. V-shaped dark lines from the dorsal furrow to the posterior lateral eyes, between them a narrower median line that does not reach the furrow. Ocular area black.

Anterior eyes seen from in front in a procurved line, the median one-half the diameter of the lateral, separated from each other by a little more than the diameter and from the lateral by half the diameter. Posterior eyes in slightly recurved line, the median a little smaller than the lateral, separated from each other by twice the diameter, subcontiguous to the lateral. Anterior lateral eyes a little larger than posterior lateral. Posterior median eyes, rounded behind, bluntly pointed in front, a little larger than anterior median. The anterior lateral eyes are the largest and the anterior median are the smallest. Median ocular area broader than long and wider behind than in front. Clypeus half as wide as ocular area, seen from the side straight slanting forward. Sternum yellowish suffused with dusky, broadly oval, bluntly pointed between hind coxae. Three pairs of sigilla, indistinct, oval, at margin of sternum opposite base of first three coxae. Labium broader than long, rounded in front. Coxae of palpus with inner distal angle slightly produced. Chelicerae not swollen, normal, compressed; the furrow shallow, armed on the inner side with four small sharp teeth, on the outer side with a row of numerous small black denticles.

Legs pale yellowish, slightly dusky above, rather robust, without scopulae, sparsely clothed with long slender hairs. Tibia of first leg armed ventrally at the middle with a strong spur which extends beyond the tip; metatarsus excavated slightly at base beneath. Palpus same color as the legs; femur cylindrical, twice as long as broad; patella short, thick, wider distally; tibia fusiform, a little longer than patella; tarsus curved, excavated below. Palpal organ consists of a simple pyriform bulb which terminates in a slender curved embolus; no conductor present. (Fig. 2.) The basal division of the bulb represented on the lateral aspect by a small brown graduate sclerite deeply emarginate posteriorly (not shown in figure, which is of mesal view). Abdomen light reddish brown, ovate, widest back of the middle; underside same color as above, lighter in front. Only two pairs of spinnerets present. The anterior ones short, cylindrical, and separated by a little more than the length. Posterior pair long, half as long as abdomen, slender, tapering towards tip, composed of three segments; apical and basal segment of nearly equal length, middle segment a little shorter than the others. Apical segment with slight indications of annulations.

♀. Two immature females were captured with the male. They are 2.5 and 2 mm. in length. They resemble the male in color and form. The chelicerae are not enlarged.

Holotype male. 1♂, 2 immature ♀. Mt. Mitchell, North Carolina, 6600 ft., 22 Oct., 1923. Collected by sifting moss.

The drawings are by Mr. Albert W. Force.

What Becomes of Great Collections?

Editor Entomological News.—It seems to me that it is just as important to know the whereabouts of the great collections which have changed hands as it is that they were formed. For this reason the writer is one of many persons who would be interested in learning through the NEWS what becomes of them. It would be a great pity if collections such as those of Kerremans and Charles Oberthür are not kept intact and placed in secure and permanent institutions. Men of wealth should take heed of such opportunities.

EDWARD A. KLAGES, Crafton, Penna.

[Mr. J. D. Sherman, Jr., in his latest catalogue of books for sale, states that the Sphingidae of the Oberthür collection, have been bought by Mr. B. P. Clark, of Boston, and the types of North American species of Lepidoptera of other groups in the Oberthür collection have been obtained for that of Dr. William Barnes.—EDITOR.]

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., MAY, 1925.

GIVE US ENTOMOLOGICAL NEWS!

From a valued letter received in response to the editorial in the NEWS for March we quote the following:

Why not specialize on the *news* aspect of your title and make yours the one really indispensable entomological journal in the country? Take your cue from your present section on "Entomological Literature." Expand your portion on reviews and notices of new books and articles. Expand your portion on obituary and biography; and invite contributions on history of entomology, biography, etc. Develop news, personal notes, notices of persons willing to determine specimens in the different groups and of persons desirous of borrowing material for study, notices of entomological expeditions, museum collections, etc. Expand the editorial page as a portion on "Entomological Opinion." Solicit general articles on phylogeny and classification of insects, general principles of taxonomy, etc. Leave the publication of life-histories, faunal lists, new species, synonymy, etc., to other journals; such articles are read only by the specialists in the various groups.

I have written the above paragraph of suggestions just as it has come to mind. I realize that the time required to prepare for publication such a journal as I propose would probably be greater than you and your assistants could give. But it would result in a journal that every entomologist would have to have. As it is, your literature notices, "news," etc., make yours the journal that I consider most valuable of the American journals. Being a coleopterist, however, I don't find much in the rest of the journal (just two articles on beetles published since October).

The above suggestions are so entirely in line with an editorial in the NEWS for May, 1921 (page 152), that we believe it not inappropriate to quote from it at this time:

We have at various times emphasized one of the ideas included in the original announcement of the NEWS, that one of its chief functions was to give entomological *news*. We do not indeed think it desirable to repeat items published in such of our contemporaries as are easily accessible to our own readers. We are also mindful of the fact that in these days of "contracted volumes" it would not be possible to publish

everything. Nevertheless, within these limitations, it is feasible to notice many topics of interest in our field. Entomological publications are appearing in many different places, entomological events of all kinds are occurring with which one or other of our readers is much more conversant than are the editors of the NEWS. We try to give you what we can at the sacrifice of time for our own studies and researches. It would make this journal more useful and attractive to all if each one of you would send to the NEWS a concise account of such important entomological happenings and researches in your own special field as come to your notice. Such items are given preference over formal papers and notes of more technical nature.

Reader—Will YOU not send us at least one note or article a year filling some one of the desiderata suggested above for the NEWS?

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

Prof. and Mrs. Cockerell to Visit Argentina.

From *Science*, March 27th, we note that Prof. T. D. A. Cockerell, with Mrs. Cockerell, will visit Argentina during the coming summer to examine localities for fossil insects which have been discovered near the eastern base of the Andes.

The New York State List of Insects.

It is known that the New York State List of Insects is now definitely to be completed, and Dr. M. D. Leonard of the Department of Entomology at Cornell University, Ithaca, will be glad to get definite records in all groups and will see that full credit is given to every cooperator. These records should be in his hands by June 1, 1925.

III. International Congress of Entomology,

Zürich, Switzerland, from July 19th to 26th, 1925. President: Dr. A. von Schulthess-Schindler, Wasserwerkstrasse 53, Zürich 6.

Membership 25 Swiss francs, associates accompanying members 12.50, Life-membership 250.00.

Entomological Societies, Institutions and Departments of Entomology, Forestry, Agriculture, Horticulture and Hygiene are invited to send Delegates.

Notifications of papers and exhibits should reach the General Secretary before July 12th. Applications for accommodation in Hotels, etc., should be sent as early as possible. All communications to be addressed to the Secretary, Dr. Kutter, Zolliker Str. 76, Zürich 8, Switzerland, or to the President.

THE EXECUTIVE COMMITTEE.

(Dr. Leuzinger, mentioned in former communications as Secretary, will unavoidably be absent from Zürich during the summer.)

The American Society of Parasitologists.

A new society, the American Society of Parasitologists, was formed at a meeting of a number of those interested in Parasitology held in Washington on Tuesday, December 30, 1924. As stated in its constitution, the object of the new society is the association of workers in the field of Parasitology for the presentation and discussion of new or important facts and problems in that science and for the adoption of such measures as shall tend to the advancement of Parasitological teaching and investigation in this country. The members of the society are of two classes, active and foreign honorary. Any person interested in Parasitology is eligible for active membership. The dues of the society were set at one dollar a year.

The Secretary-Treasurer is ready to receive applications for membership accompanied by dues for the first year. Also, the council will be glad to receive suggestions from anyone interested in regard to the policies or activities of the new society.

W. W. CORT, *Secretary-Treasurer,*
310 W. Monument Street, Baltimore, Md.

Entomologists Are Honest.

When I began collecting dragonflies more than 30 years ago, I found I needed a lighter net than was then available, one that could be swung more quickly. I began making my own nets after various designs, and finally devised the detachable flat-wire rim that has long been known as the distinctive feature of the Simplex Net. This net weighed but a few ounces, and was more durable than any of the heavy nets with jointed rims. I found it could be made and sold for less than half the cost of the others; so I arranged a little business under the name of the Simplex Net Co., to supply this net to entomologists. It has been a little one-room business, managed mostly by a succession of students at their odd hours.

Looking over the records of the Simplex Net Co., now that

a change in the business is imminent, I find in them a remarkable tribute to the honesty of entomologists. I find that 1,610 orders for nets have been filled, most of them going to entomologists, and most of the orders being sent in on a post-card blank, and being mere promises to pay if the nets proved satisfactory. Not a single entomologist has failed to pay! Two orders only, of the entire lot, remain unpaid; but these two did not go to entomologists.

Recently, the A. I. Root Co. of Medina, Ohio, has decided to go into the manufacture of supplies for entomologists (insect boxes, nets, etc.), and to do it on a scale large enough to enable them to sell cheaply. This company will hereafter be the source of supply for the Simplex nets.

JAMES G. NEEDHAM, Ithaca, New York.

An Enquiry.

Mr. N. D. Riley, 5, Brook Gardens, Barnes, London, S. W. 13, requests through *The Entomologist* information relative to *Pyrameis atalanta* feeding upon thistle. He knows of no record of such an instance.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph at the end of their respective orders. Those containing descriptions of new genera and species occurring north of Mexico are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

The titles occurring in the Entomological News are not listed.

4—Canadian Entomologist. 6—Journal, New York Ent. Soc. 9—The Entomologist. 10—Proc., Entomological Society of Washington. 12—Journal of Economic Ent. 13—Journal of Entomology and Zoology, Claremont, Cal. 14—Entomologische Zeit., Frankfurt a. M. 17—Entomologische Rundschau, Stuttgart. 19—Bull., Brooklyn Ent. Soc. 25—Bull., Soc. Ent. France. 26—Entomolog. Anzeiger, Wien. 28—Ent. Tidskrift, Upsala. 33—Bull. et Annal. Soc. Ent. Belgique. 33—Bull., Soc. Ent. Belgique. 36—Trans., Ent.

Soc., London. 39—The Florida Entomologist. 45—Zeit. f. Wissenschftl. Insekentb., Berlin. 47—Neue Beitr. z. Syst. Insektenkunde. 49—Entomolog. Mitteil., Berlin. 50—Proc., U. S. Nat. Mus. 55—The Pan-Pacific Entomologist. 64—Zeit., Oesterr. Ent. Ver., Wien. 68—Science. 89—Zool. Jahrbucher, Jena. 101—Biolog. Bulletin, Woods. Hole, Mass. 103.—Proc., Zool. Soc. London. 105—Proc., Biol. Soc. Washington. 113—Jour. Agric. Research, Washington. 151—Occas. Pap., Boston Soc. Nat. Hist. 153—Bull., Mus. Nat. Hist. Naturelle, Paris. 154—Zoolog. Anzeiger.

GENERAL.—Bang-Haas, A.—Obituary note of **14,** xxxviii, 99. **17,** xlii, 9. **26,** v, 37. **Beebe, W.**—Studies of a tropical jungle * * * at Kartabo, Br. Guiana, (Zoologica, New York, vi, 1-193.) **Beyer, G.**—Obituary, **6,** xxxii, 165-6. **Boving, A. G.**—A summer trip in Iceland south of Vatna-Jokul. **10,** xxvii, 17-35. **Cockerell, T. D. A.**—The entomology of the Gulf of California. **55,** i, 139-41. ***Cockerell, T. D. A.**—Plant and insect fossils from Green River Eocene of Colorado. **50,** lxvi, Art. 19. **Cockerell, W.**—The singing insects of Japan. (Nature Mag., 1925, 220-2.) **Crossman, S. S.**—Foreign travel and entomologists met while searching for enemies of the gipsy moth. **12,** xviii, 164-72. **Doane, R. W.**—Scientific names of economic insects. **12,** xviii, 158-62. **Dobroscky, I. D.**—External parasites of birds and the fauna of bird's nests. **101,** xlviii, 274-81. **Eder, R.**—Haufig oder selten? **64,** ix, 107-9. **Escherich, K.**—Zeit. f. angewandte entomologie, xi, Heft 1. **Felt, E. P.**—The dissemination of insects by air currents. **12,** xviii, 152-8. **Frost, S. W.**—Frogs as insect collectors. **6,** xxxii, 174-85. **Gonner, P.**—Blumen und insekten. **14,** xxxviii, 99-101 (cont.) **Grutzner, H.**—Zu dem artikel des H. Leiberg uber den ameisenlowen. **26,** v, 27-30. **Gurney, R.**—Modern zoological nomenclature. (Tr. Norfolk & Norwich Nat. Soc., x, 335-52, 1915.) **Handel, K. P.**—Vogel als beste und naturgemasse bekampfer der schadlinge aus dem insektenreiche. **14,** xxxviii, 101-2. **Handlirsch, A.**—Fossilium catalogus. I: Animalia. Pars 16: Insecta palaeozoica. 230 pp. **Janeck, G.**—Erlebtes und erprobtes. **14,** xxxviii, 101. **Schade, F.**—Eine sammelexcursion nach den bergen von central Paraguay. **17,** xlii, 6-7. **Scott, H.**—Notes on the habits of insects and spiders in Brazil. **36,** 1924, 475-504. **Sherman, J. D.**—Some entomological and other bibliographies. **6,** xxxii, 206-15. **Simon, E.**—Notas necrologicas. (Bol. R. Soc. Es-

panola Hist. Nat., xxv, 67-70). **Thienemann, A.**—Drei entomologische kleinigkeiten. **45,** xix, 191-2. **Weese, A. O.**—Animal ecology of an Illinois elm-maple forest. (Ill. Biol. Mon., ix, No. 4.) **Weiss, H. B.**—Ultraviolet and flower-visiting habits of insects. **6,** xxxii, 195.

ANATOMY, PHYSIOLOGY, MEDICAL, ETC.—Diakonov, D. M.—Experimental and biometrical investigations on dimorphic variability of Forficula. (Jour. Genetics, xv, 201-32.) **Eidmann, H.**—Vergleichend-anatomische studien uber die pharynxmuskulatur der insekten. **154,** lxii, 49-64. **Eidmann, H.**—Die physiologie des kaumagens der insekten. (Sitz. Ges. f. Morph. u. Phys., Munchen, xxxv, 20-21.) **Eidmann, H.**—Untersuchungen uber wachstum und hautung der insekten. (Verh. Deut. Zool. Ges., xxix, 124-9.) **Fink, D. V.**—Metabolism during embryonic and metamorphic development of insects. (Jour. Gen. Phys., vii, 527-43.) **Gatenby, J. B.**—Spermatogenesis of Peripatus. (Nature, London, cxv, 381-2.) **Gerhardt, U.**—Uber das sinnesieben und die plastizitat der instinkte bei spinnen. (Verh. Deut. Zool. Ges., xxix, 64-9.) **Jezhikov, I.**—Ueber die morphologische bedeutung der larve der holometoba **49,** xiii, 328-42. **Kahn, R. H.**—Kopftransplantation an Carausius morosus. **154,** lxii, 75-9. **Pellew, C.**—A note on the inheritance of egg-colour in the silkworm. (Jour. Genetics, xv, 233-5.) **Philpott, A.**—On an abdominal scent-organ(?) in Sabatinca and other primitive genera of lepidoptera. **36,** 1924, 457-61. **Pigorini, L.**—Sur la presence 'dune catalase dans les oeufs de Bombyx mori. (Arch. Ital. Biol., Pise, lxxxiii, 121-25.) **Pruthi, H. S.**—On the post-embryonic development and homologies of the male genital organs of Tenebrio molitor. On the development of the ovipositor and the efferent genital ducts of T. molitor, with remarks on the comparison of the latter organs in the two sexes. **103,** 1924, 857-69; 869-84. **Richards & Furrow.**—The eye and optic tract in normal and "eyeless" Drosophila. **101,** xlviii, 243-59. **Surcouf & Fischer.**—Notes sur la vie larvaire et nymphale du Tabanus bromius. **25,** 1925, 232-37. **Weiss, H. B.**—The acidities within the alimentary tracts of insects. **6,** xxxii, 220. **Withycombe, C. L.**—Some aspects of the biology and morphology of the Neuroptera. With special reference to the immature stages and their possible phylogenetic significance. **36,** 1924, 303-411.

ARACHNIDA AND MYRIOPODA.—Miller, A. E.—The native host of the chigger. **68,** lxi, 345-6.

Chamberlin, R. V.—Notes on chilopods and diplopods from Barro Colorado Id., and other parts of the Canal Zone, with diag. of n. sps. **105,** xxxviii, 35-44. **Crosby, C. R.**—A note on two gen. of spiders, Mysmena and Microdipoena. **4,** lvii, 50. ***Ewing, H. E.**—New and parasitic mites of the gen. Laelaps. **10,** xxvii, 1-7. **Ewing, H. E.**—The adult of our common N. Am. chigger. **105,** xxxviii, 17-20. **Mello-Leitao, Dr.**—Algumas aranhas novas do Brasil. (Bol. Mus. Nac. R. d. Janeiro, i, 275-81.)

THE SMALLER ORDERS OF INSECTA.—*Hood, J. D.—Four new Phloethripidae from New York (Thysanoptera). **19,** xx, 26-32. **Lestage, J. A.**—Notes trichopterologiques 7. **33,** lxv, 33-44. ***McDunnough, J.**—New Ephemerella species. **4,** lvii, 41-3. **Navas, R. P. L.**—Odonatos nuevos o interesantes. (Mem. R. Ac. Cien. y Artes, Barcelona, xviii, No. 13.) **Snyder, T. E.**—Description of winged adult of Kalotermes approximatus. (Isoptera). **10,** xxvii, 14. **Snyder, T. E.**—New termites and hitherto unknown castes from the Canal Zone, Panama. **113,** xxix, 179-93. ***Watson, J. R.**—Additions to the Thysanoptera of Florida. XII. **39,** viii, 50-2.

ORTHOPTERA.—Carpentier, F.—Sur le double stigmate de quelques orthopteres. **34,** vi, 123-40. **Stewart, A. M.**—Blabera cubensis and its ootheca. **9,** 1925, 57-8.

Davis, W. T.—Melanoplus differentialis a new grasshopper to the state of N. Y. **6,** xxxii, 215. **Uvarov, B. P.**—Notes on the O. in the Br. Mus. 4. Identification of types of Acrididae preserved in the museum. **36,** 1924, 265-301.

HEMIPTERA.—Hussey, R. F.—Hydrometra australis in New York state. **19,** xx, 16. **Torre Bueno, J. R.**—A new food-plant of Ischnorhynchus geminatus. **19,** xx, 60.

Barber, H. G.—Hemiptera-Heteroptera from the Williams Galapagos expedition. (Zoologica, v, 241-54.) **Buys, J. L.**—The Cicadellidae of the vicinity of Ithaca, with special reference to the structure of the gonapophyses. (Mem. 80, Cornell Univ. Agr. Exp. Sta., 115 pp.) ***Cockerell, T. D. A.**—(See under General.) **Ferris, G. F.**—Observations on the Chermidae. (Homoptera.) **4,** lvii, 46-50. **Haviland, M. D.**—The Membracidae of Kartabo, Br. Guiana, with descr. of n. sps. and bionomical notes. Zoologica, New York, vi, 229-90.) ***Hoke, G.**—A diaspine with legs (Coccidae). **10,** xxvii, 36-40. ***Hungerford, H. B.**—Notes on some N. Am. Corixids from the southwest. **19,** xx, 17-25. ***Knight, H. H.**

.—Descr. of 30 new sps. and two n. gen. of No. Am. Miridae. **19,** xx, 33-58. ***McAtee, W. L.**—Notes on Eupterygid leafhoppers with descr. of a few forms. **39,** viii, 33-9. **Muir, F.**—On the gen. of Cixiidae, Meenoplidae and Kinnaridae (Fulgoridae). **55,** i, 97-110. **Schmidt, E.**—Neue zikadengattungen und arten. Cicadidae, Cercopidae, Membracidae, Fulgoridae. **49,** xiii, 285-97.

LEPIDOPTERA.—Atkinson, F. B.—Antics of the puss moth. (Nature Mag., 1925, 240.) **Engelhardt, G. P.**—Notes on early spring collecting of Noctuidae. **19,** xx, 59-60. **Forbes, W. T. M.**—Two minor pests from Europe (Plutellidae). **6,** xxxii, 173. **Hoffmann, C. C.**—Manual para el estudio y la recoleccion de L. en Mexico. (Mem. Soc. Cien. "Antonoi Alzate", xli, 441-526.) **Mousley, H.**—Further notes on the orchids, ferns and butterflies of Hatley, Stanstead Co., Quebec, 1924. (Can. Field-Nat., xxxix, 37-9.) **Weigel, Broadbent, Busck, & Heinrich.**—The greenhouse leaf-tier, Phlyctaenia rubigalis. **113,** xxix, 137-58. **Weiss, H. B.**—The olfactory sense of the cabbage butterfly. **6,** xxxii, 166.

Barnes & Benjamin.—On the types of Pyrausta cafferii. Change of a preoccupied name (Aegeriidae). **10,** xxvii, 7; 14. ***Barnes & Benjamin.**—Two new Californian Limacodid moths. Notes on some sps. of L. in relation to the Stretch Coll. **55,** i, 126; 127-38. ***Cockerell, T. D. A.**—A new form of Smerinthus (Sphingidae). **9,** lviii, 37-8. **Draudt, M.**—Macrolepidoptera of the world. Faun. Amer., Pt. 160, Noctuidae, Gen. Polia to Epia. **Kruger, E.**—Beitrage zur kenntniss der Colunbischen Satyriden. **17,** xlii, 10-12 (cont.). **Kaye, W. J.**—New sps. and subsps. of Trinidad Rhopalocera and Heterocera. **36,** 1924, 413-28. **Niepelt, W.**—Eine neue Nymphalide von Columbien. **17,** xlii, 7. **Riley & Gabriel.**—Catalogue of the type specimens of L. Rhopalocera in the Bri. Mus.), Satyridae. (Br. Mus. Pub., 62 pp.) **Stechel, H.**—Zur systematik der Brassolidae. **47,** iii, 58-60 (cont.)

DIPTERA.—Anon.—The future of the study of flies. (Scott. Nat., 1925, 19-20.) **Ballou, L. M.**—Some dipterous galls of southern California. **13,** xvii, 1-8. **Bell, E. L.**—Notes on Asilus sericeus. **6,** xxxii, 219. **MacGill, E. I.**—A proboscis of Calliphora with two pairs of palps. **9,** 1925, 49-50. **Shannon, R. C.**—Brief history of egg-laying habits of Dermatobia. (Jour. Wash. Ac. Sc., xv, 137-8.)

Borgmeier, T.—Um novo genero de Phorideos do Parana. (Bol. Mus. Nac. R. d. Janeiro, i, 283-8.) ***Cockerell, T. D. A.**—(See under General.) ***Curran, C. H.**—New sps. of Xylota (Syrphidae). Notes on some sps. of the gen. Eristalis. **4,** lvii, 44-5; 50. **Czerny, L.**—Monographie der Helomyziden. (Abh. Zool.-Bot. Ges. Wien, xv, 1-166.) **Edwards, F. W.**—Notes on the types of Mycetophilidae described by Staeger and Zetterstedt. **28,** xlv, 160-8. **Edwards, F. W.**—British fungus-gnats, with a revised generic classification of the family. **36,** 1924, 505-670. ***Enderlein, G.**—Zur klassifikation der Phoriden und uber vernichtende kritik. **49,** xii, 270-81. ***Felt, E. P.**—Key to gall midges (A resumé of studies I-VII, Itonididae). (New York Sta. Mus. Bull., No. 257.) **Greene, C. T.**—The puparia and larvae of sarcophagid flies. **50,** lxvi, Art. 29. **Johnson, C. W.**—Fauna of New England. 15, List of the D. or two-winged flies. **151,** vii, 326 pp. ***Spuler, A.**—No. Am. sps. of Borborus, and Scatophora. **19,** xx, 1-16.

COLEOPTERA.—Cockerell & Harris.—The wings of the meloid beetles. **105,** xxxviii, 25-32. **Davis, A. C.**—Pleocoma behrensi. **55,** i, 110. **Knaus, W.**—1923 collecting notes. **6,** xxxii, 170-3. **Larson & Fisher.**—Longevity and fecundity of Bruchus 4-maculatus as influenced by different foods. **113,** xxix, 297-305. **Muir, F.**—The male genitalia of Cupes concolor. **6,** xxxii, 167-9. **Schilder, F. A.**—Der zweipunkt (Adalia bipunctata). (Die Umschau, xxix, 128-9.) **Schjelderup-Ebbe, T.**—Aufmerksamkeit bei kaefer. **14,** xxxiii, 93-4.

***Chamberlin, W. J.**—Notes on the Buprestidae of Oregon, with descr. of n. sps. **6,** xxxii, 186-95. ***Cockerell, T. D. A.**—(See under General.) **Desbordes, H.**—Description un Saprinus nouveau de Amerique du Sud. (Histeridae). **153,** 1924, 372-3. **Fisher, W. S.**—Two new Mexican Cerambycidae. **10,** xxvii, 15-6. **Fisher, W. S.**—Buprestid beetles coll. by the Mulford Biol. Expl. in Bolivia. **50,** lxvi, Art. 31. **Hatch, M. H.**—A list of C. from Charlevoix Co., Michigan. (Pap. Mich. Ac. Sc., iv, 543-86.) **Reichensperger, A.**—Zur kenntniss myrmekophiler Histeriden. **49,** xiii, 302-8. ***Swaine, J. M.**—A n. sp. of Polygraphus. **4,** lvii, 51. ***Van Dyke, E. C.**—Studies of western No. Am. Carabidinae, with descr. of n. sps. **55,** i, 111-25. **Weiss & West.**—Notes on the rush weevil, Limnobaris rectirostris in N. J. **6,** xxxii, 196-205.

HYMENOPTERA.—Bertin, L.—Faits nouveaux ou peu connus concernant les fourmis. (La Nature, 1925, 43-8.) **Friese, H.**—Ueber die nestzellen der blattschneiderbienen Megachile azteca. **45,** xix, 193-4. **Handel, K. P.**—Sind die vogel feinde der bienen? **14,** xxxviii, 97. **Smith, J. N. D.**—Bumble-bees' unusual nesting sites. (Scott. Nat., 1925, 26.) **Stadler, H.**—Einiges uber wespenbauten. (Verh. Deut. Zool. Ges., xxix, 78-81.)

Ducke, A.—Die stachellosen bienen (Melipona) Brasiliens. **89,** xlix, Syst., 335-448. ***Sandhouse, G. A.**—Canadian bees of the genus Osmia. **4,** lvii, 33-41. (Cont.) **Viereck, H. L.**—The identity of Platycampus victoria (Tenthredinidae). **4,** lvii, 43.

SPECIAL NOTICES.

Diptera of New England.—This publication cited above under Diptera, by C. W. Johnson, will be of great use to students of this order, especially those interested in the dipterous fauna of the eastern United States. It is a faunal list, but there is a good bibliography included, and the systematic arrangement of the genera and species will greatly help in arranging collections.

Entomologisches jahrbuch fur 1924 u 1925. von Dr. O. Krancher, Leipzig. This pocket size volume 208 pp. is a "kalender fur alle insekten-sammler auf die jahre 1924-25." Altho treating of such subjects for European collectors, it also contains much of interest to all entomologists; especially so is the monthly list of the birthdays of entomologists, mostly of Europe and of general note.

Index Animalium.—Another part of this important work has just appeared. This part 5 includes the index for C to Ceyl, 1801-1850.

Instructions for collectors published by the British Museum. No. 4 refers to insects in general, No. 8 to spiders, centipeds, peripatus, etc.

Japan in 1923.—By T. D. A. Cockerell, Sci. Month., xx, 405-15. In this account of his travels in Japan, Prof. Cockerell makes mention of some of the more noticeable insects seen as well as giving interesting notes of his experiences with the natives and their customs.

Note that beginning with **June** number we will present this literature list in a slightly different form. All morphological and anatomical articles referring to insects of a particular order will be listed under that order. Taxonomic articles on North American insects will be headed by para-

graph (N) under their respective orders; those on South and Central America, by (S).

Quebec society for the protection of plants, Sixteenth annual report, 1923-1924. This report of 147 pages contains many papers on insects, but are of economic nature and are not otherwise recorded here.

Sarcophaginae in the Oriental region, Revision of. By R. Senior-White. Records of Indian Museum, xxvi, Part 3. This paper altho treating of the oriental species has some general notes and discussions which should be of interest to the students of this dipterous family.

Satyridae.—Catalogue of the type specimens * * * in the British museum. (See Riley & Gabriel under Lepidoptera.)

Theses entomologigues (Lepidopteres). Notes et remarques sur les Agrias. Fascicle Fascicule I of this work dealing with many forms of the very attractive Agrias group is remarkable for the magnificent hand-colored plates which equal anything hitherto produced in entomological literature [Ex. Edit. Bul. Hill Mus., i, No. 3].

The REVISTA CHILENA DE HISTORIA NATURAL has completed twenty-seven years of existence, vol. xxvii (1923), 261 pages, dated 1924 at Santiago de Chile, having been recently received. Its director, editor and founder, Prof. Dr. Carlos E. Porter (who has recently been appointed Chief of the Department of Entomology at the National Museum of Chile) is to be congratulated on the success with which he has maintained this journal. The *Revista* is dedicated to the promotion and cultivation of the natural sciences in the country whose name its title contains and this volume consequently, although including some articles of a general nature (such as that by Dr. E. Giacomelli on the mimetic significance of the eye spots, and in general of the lower surface of the wings, in the genus *Caligo*) is chiefly composed of contributions to the Chilian fauna, flora and biological bibliography. We note among them 21 on various insects and arachnids by Dr. Porter himself, Dr. J. Brethes, P. Herbst, F. Ruiz P., R. Martin, L. Navas, F. C [W.] Goding, H. Claude-Joseph and J. C. Chamberlin. One of the most extensive of these is "Los estudios sobre Neuropteros chilenos (Apuntes historico-bibliograficos)," by Dr. Porter, giving an alphabetical list of the authors who have written upon Chilian Neuroptera, the titles and places of publication of their articles on this fauna, and notes thereon ac-

companied by portraits of Emile Blanchard, René Martin and R. P. Longinos Navas. Seventeen new species of insects (3 Coleoptera, 7 Neuroptera Chrysopidae, 6 Hymenoptera, 1 Hemiptera) and 2 new species of Pseudoscorpions from Chile are described in this volume. Pages 225-241 give an account of the foundation of the Sociedad Entomologica de Chile in May, 1922, and summaries of the proceedings of the meetings from June 4, 1922, to Dec. 9, 1923. P. P. CALVERT.

FIJI-NEW ZEALAND EXPEDITION by C. C. NUTTING, R. B. WYLIE, A. O. THOMAS, DAYTON STONER collaborating. University of Iowa Studies in Natural History, Vol. X, No. 5. Iowa City, Sept. 1, 1924. 369 pp., 58 half-tone plates. Obtainable from the University Editor, Price, $3.00. "This volume is the fourth narrative in book form of expeditions sent out in the interest of natural science from the State University of Iowa. The first of these was 'Explorations in the Far North,' by Frank Russell, a narrative of a trip . . . in 1892-3 to the Barren Ground of Arctic America. . . . The second was a 'Narrative and Preliminary Report of the Bahama Expedition' by C. C. Nutting published . . . in January, 1895. . . . The third . . . was the 'Barbados-Antigua Expedition . . . ' by C. C. Nutting published in 1919. . . . It has seemed that much of interest has been lost to the general public by the failure of those in charge of scientific explorations sent out by our universities to recognize the claims of the general public to a more popular account of such work than is given in the series of technical reports customarily issued. To meet this need of easily assimilated general knowledge for the public at large these narratives have been prepared and issued by the University of Iowa. . . ."

The Fiji-New Zealand Expedition consisted of six persons: Profs. Nutting and Stoner and Mrs. Stoner (zoology), Prof. Wylie (botany), Prof. Thomas and Mr. Glock (geology). Leaving Iowa City, May 14, 1922, and Vancouver on May 19, the expedition proceeded to Honolulu (one day's stop), Fiji, June 5—July 3, New Zealand July 7—August 15, and after brief stops at Rarotonga and Tahiti, returned to San Francisco on September 4. The narrative is divided into nineteen chapters, most of them by Prof. Nutting. Two are written by Prof. Stoner: Ornithological and Entomological Experiences in Fiji and New Zealand, respectively, in which the principal characteristics of the insect fauna of these islands in

relation to other Pacific lands are stated with notes on the most common or most striking species met. The generic and specific names of these are given so that, although the popular character of the book is maintained, a precise and scientific value also is secured. To entomologists these chapters will, therefore, be interesting and helpful and no doubt introductory to the reports by specialists, on the extensive collections made, which we may expect in the future. The numerous photographs taken by the expedition add greatly to the interest of the volume.

P. P. CALVERT.

Doings of Societies.

The American Entomological Society.

Meeting of Oct. 23, 1924, in the hall of the Academy of Natural Sciences of Philadelphia.

Dr. Henry Skinner presided, nine members and contributors present.

Mr. Cresson for the Committee on Property reported that the general entomological library had been rearranged, and the section of the journals had been labelled. Photographs of the Fabre Memorial and of the J. D. Gunder collection received. 145 Riker mounts presented by R. C. Williams, Jr., were received and sold. Numerous specimens of *Plagiodera versicolor* Linn., from Pennsylvania, were received from Elwood B. Chapman, Mr. Hornig reporting that this insect feeds on poplar and willow.

Mr. Williams was tendered a vote of thanks for the Riker mounts.

A letter was read from Mr. Ezra T. Cresson requesting that he be relieved of his duties as Treasurer.

Dr. Philip P. Calvert offered the following resolution which was seconded by Mr. Hebard and unanimously carried:

The American Entomological Society hears, with deep regret, the letter from the Treasurer, Mr. E. T. Cresson, dated October 20, 1924, requesting that he be relieved of his office. This Society looks on Mr. Cresson as its founder. It recalls the sixty-five years which he has devoted to its welfare as a member of its Publication Committee, as Editor of its Transactions and as Treasurer, the last for fifty consecutive years. His services have been given without salary or pecuniary reward. In acceding to Mr. Cresson's request, this Society desires to place upon record its appreciation of his unselfish and untiring

labors in its behalf, its pride in his long connection with the Society and in his numerous contributions to Entomology, and its best wishes that he may long remain with us as our most honored member.

Mr. Williams moved that the chair appoint a committee of three to revise the By-laws and offer a brief of such proposed revision at the next meeting for consideration by the Society. His motion was seconded and carried.

Mr. Rehn reported on the successful Entomological gathering of the North Eastern Branch of the Association of Economic Entomologists, on July 30.

COLEOPTERA.—Mr. Cresson reported the prevalence of *Plagiodera versicolor* Linn. at Swarthmore, Pennsylvania, now becoming injurious to vegetation in this vicinity. Mr. Hornig exhibited specimens of *Amphicoma vulpina* from Riverton, New Jersey, there being only one previous record.

LEPIDOPTERA.—Dr. Skinner showed a black *Colias philodice* (*nigridice*) caught by Mr. Napier, also a *Papilio glaucus*, the left wing with ♂ markings and the right wing ♀, and a very aberrant black mottled ♂ of this species.

Meeting of December 8, 1924, Dr. Henry Skinner presiding. Nine members and contributors present.

Reports of the Treasurer, the Publication Committee, the Finance Committee, the Committee on Property and of the Committee on Revision of the By-laws were presented. The proposed By-laws were read and discussed, article by article, and some changes in phraseology were unanimously adopted.

Dr. Henry Skinner was elected President, Mr. Philip Laurent was elected Vice-President. On account of the lateness of the hour, on motion by Mr. Hebard, seconded by Mr. Calvert, the Secretary was authorized to cast a ballot for the gentlemen nominated at the October meeting for the remaining offices and as members of Committees. This motion being carried, the following gentlemen were elected all to serve until the adoption of the new By-laws, at the next meeting, involving nomination and elections under those By-laws. *Treasurer,* R. C. Williams, Jr.; *Recording Secretary,* R. J. Titherington; *Corresponding Secretary,* Philip P. Calvert; *Finance Committee,* Morgan Hebard, J. A. G. Rehn, F. R. Mason; *Publication Committee,* J. A. G. Rehn, Morgan Hebard, Philip P. Calvert; *Property Committee,* E. T. Cresson, Jr., Morgan Hebard, Philip Laurent.

R. C. WILLIAMS, *Recording Secretary.*

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted—Connection with collectors who can furnish me early in the fall living and hibernating pupae of western and southern Papilio and Saturnidae and allied groups. Fertile eggs of Apanteris and Catocala also desired. Max Rothke, 1841 E. Elm St. (R. D. 2), Scranton, Pa.

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Wanted—Living pupae of Actias luna, Hemileuca maia and Basilona imperialis.—Mrs. Robert Milde, Lewiston, Minnesota.

Wanted for cash or exchange, good, healthy living pupae of **T. imperialis.** Must be of good size.—A. J. Potter, East Killingby, Conn.

Wanted—Canadian Entomol, Vol. 2 (1869) to 8 (1876); Vol. 17 (1885), Nos. 5, 9; Vol. 18 (1886), No. 3; Amer. Entomologist, Vol. 1 to 3 (1868-1880); Zoe, Vol. 5, No. 12; Proc. Ent. Soc. Washington, Vol 1 (1899) to 5 (1903); all in exchange for **Cetonides** and **Longicorns** from New Guinea or other countries. Also entomol. literature could be given. Address, Deutsches Entomol. Institut, (Walther Horn), Gossler Str. 20, Berlin-Dahlem, Germany.

I will collect Coleoptera and Lepidoptera in southwest Arkansas for those so interested.—Miss Louise Knobel, Route 2, Box 125a, Hope, Arkansas.

Wanted—Correspondence with collectors desiring to make a trip to South America to collect with me as a companion. Write—A. F. Porter, Decorah, Iowa.

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Will send volumes XXV (1921) and XXVII (1923), Revista Chilena de Historia Natural, in exchange for School Entomology by Sanderson & Peairs and Classbook of Economic Entomology by Wm. Lochhead (latest editions) sent to me by registered mail. Will give vol. XXXV also for a copy of American Insects by V. L. Kellogg (last edition) sent registered. Prof. Dr. C. E. Porter, Casilla 2974, Santiago, Chile.

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863.—**Coolidge** (K. R.).—Life history studies of some Californian Rhopalocera. (Trans., **50**, 319-335, 1925) ..... .35

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ORTHOPTERA.

859.—**Hebard** (M.).—A revision of the genus Taeniopoda (Acrididae, Cyrtacanthacrinae). (Trans., **50**, 253-274, 1925) .45

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